

DETAILED ACTION

Applicant's submission filed on 4/5/2011, supplemental response of 6/15/2011 and IDS of 7/1/2011 have been entered as compliant. No claim amendments have been presented and claims of 1/10/2008, 1-8 and 10-15 are examined in the current application.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

A) Claims 1, 4-5, 7-8, 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over IDS reference to Hayashi (JP 2003321502 abstract and machine translation), in view of the combination of Musher and Handbook of Hydrocolloids (Pages 155-168).

Regarding claims 1, 4-5, 7-8 and 10, Hayashi teaches a method for enhancing the emulsification ability of gum arabic comprising a step of making unheated gum arabic into an aqueous dispersion and a step of maintaining the thus-obtained aqueous solution to 30 °C or higher (Abstarct and paragraph 6 of translation), which overlaps with

applicant's claimed temperature treatment of below 60°C (for claims 1 and 7) and 5-40 °C as recited in claim 4, and 10 to 50 °C (claim 8). Hayashi does not disclose the entire range of temperature, however, Musher teaches that water soluble gums, such as, gum arabic, to produce a composition without heating (Page 2, Column 1, lines 32-36). Thus treatment of gum arabic in the recited temperature range was known, as disclosed by Musher and Hayashi. Further, emulsions made with gum arabic without application of heat were also known. Therefore It would have been obvious to one of ordinary skill in the art at the time of the invention that gum arabic makes stable emulsions after low temperature treatment, as well as without any heat treatment (Musher).Regarding the overlapping of ranges between the invention and prior art composition it is noted that in the case where the claimed ranges "overlap or lie inside the ranges disclosed by the prior art" a *prima facie* case of obviousness exists (In re Wetheim, 541 F2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990)).

Regarding the heat treatment time aqueous solution is maintained at below 60°C of at least 6 hours (claim 5) and the time for which the aqueous solution is maintained at below 60 °C is at least 3 hours, Hayashi translation , paragraph 12 discloses the claimed limitation of soaking for up to 30 days.

Regarding claim 11, Hayashi teaches gum arabic, belonging to the *Acacia Senegal* species (translation, pa 16), that typically gum arabic has a mass-average molecular weight of not less than 1.5 million, as evidenced by *Handbook of hydrocolloids*.

Regarding, claim 12, Hayashi abstract discloses, use of gum arabic as an emulsifier to make emulsified perfume, emulsified coloring matter. It is noted that perfumes comprise fragrant oils, thus, emulsified perfume or emulsified coloring matter would be an emulsion comprising oils as claimed. Musher teaches of an emulsified fat composition(entire document).

Regarding, claims 13 and 15, Hayashi teaches of perfume, confection and Musher teaches of emulsified food base composition, (page 2, column 1, lines 30-45) a method for preparing an emulsion comprising the step of dispersing a hydrophobic material in a hydrophilic solvent or dispersing a hydrophilic material in a hydrophobic solvent, gum arabic as claimed. Therefore, creating an emulsion comprising gum arabic as claimed was known in the art as disclosed by both references. Further, dispersing in hydrophilic solvent, i.e., water was well known in the art (Musher). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hayashi further in view of Musher and disperse gum arabic in hydrophilic material, at least for the purpose of fully dispersing the gum before adding the hydrophobic component to create a stable O/W or W/O/W emulsion.

Regarding, claim 14, Hayashi abstract discloses, use of gum arabic as an emulsifier to make emulsified perfume, emulsified coloring matter. It is noted that perfumes comprise fragrant oils, thus, emulsified perfume would be an O/W or W/O/W emulsion comprising oils from the recited list from claim 14.

Regarding the limitation of at least one hydrophobic substance selected from the group consisting of essential oils, oil-soluble flavors, oil-soluble colors, oil-soluble vitamins, polyunsaturated fatty acids, animal oils, vegetable oils, sucrose acetate isobutyrate, and medium-chain triglycerides, as recited in claims 14 and 16, Hayashi teaches of perfumes and confections etc which use essential oils for flavor and fragrance. Musher teaches of edible oils, on page 1, Column 2, lines 15-28. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hayashi further in view of Musher and disperse gum arabic in hydrophilic oily material from the oils and fats disclosed by Musher, at least for the purpose of utilizing most suited fats and oils for the intended purpose to create a stable O/W or W/O/W emulsion.

B) Claims 2-3, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi, Musher and Handbook of Hydrocolloids as applied to claim 1, further in view of IDS reference to Lee et al (EP 0108594), hereinafter Lee. Hayashi, in view of the combination of Musher and Handbook of Hydrocolloids (Pages 155-168) have been applied to 1, 4-5, 7-8, 10-16 above.

Regarding the amount of gum arabic in an emulsion as recited in claims 2-3, Hayashi is silent. Musher teaches that gum amounts can be varied based on the viscosity of the emulsion (Page3, Column 1, lines 13-16). Lee teaches of emulsions with 10-30% gum arabic (Page6, lines 23-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hayashi further in view of Lee and utilize gum arabic in an amount to make an emulsion with desired viscosity or thickness.

Regarding the heat treatment time aqueous solution is maintained at below 60°C of at least 6 hours (claim 5) and the time for which the aqueous solution is maintained at below 60 °C is at least 3 hours, Hayashi translation, paragraph 12 discloses the claimed limitation of soaking for up to 30 days.

Regarding the pH of the aqueous solution is 4.5 to 6 (claim 6), Hayashi is silent, however, gum arabic was known to form stable acidic emulsified compositions with pH 3.5-4.0 (Lee page 8, line 9). Further, handbook of hydrocolloids discloses that gum arabic does not lose its properties in acidic medium. Furthermore, dispersion of gum arabic in products like salad dressings, spreads, jellies, fruit preserves, having acidities in the claimed range has been well known in the art (Handbook of Hydrocolloids, Lee) Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hayashi further in view of Lee and disperse gum arabic in an acidic medium at least for the purpose of creating an emulsion or dispersion with desired tartness or sourness.

Response to Arguments

Applicant's arguments filed 4/5/2011, and 6/15/2011 have been fully considered but are not persuasive.

Applicants' remarks regarding the process steps are relevant and have been considered but have not been found persuasive.

Applicant argues that (JP 2003321502) to Hayashi is not applicable as Hayashi teaches a paste and not an aqueous solution (Remarks of 4/5/2011, page 3)

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case Hayashi is employed in combination with Musher and Handbook of Hydrocolloids (for claims 1, 4-5, 7-8, 10-16) and further in view of Lee (Claims 2-3 and 6). Hayashi teaches a method for enhancing the emulsification ability of gum arabic comprising a step of making unheated gum arabic with water and a step of maintaining the thus-obtained aqueous solution to 30°C or higher (Abstract and paragraph 6 of translation), which overlaps with applicant's claimed temperature treatment of below 60°C (for claims 1 and 7) and 5-40 °C (claim 4), and 10 to 50 °C (claim 8). Musher has been relied upon to show that that water soluble gums, such as, gum arabic, produce an aqueous dispersion or solution without heating (Page 2, Column 1, lines 32-36).

Thus treatment of gum arabic in the recited temperature range was known, as disclosed by Musher and Hayashi. Further, emulsions made with gum arabic without application of heat were also known. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that gum arabic makes stable emulsions after low temperature treatment, as well as without any heat treatment (Musher).

Regarding the amount of water, Hayashi adjusts the moisture of gum arabic to an extent, but Musher teaches that gum amounts can be varied based on the desired

viscosity of the solution (Page3, Column 1, lines 13-16). Further, Lee (EP 0108594) has been relied upon to show the conventionality of utilizing gum arabic in claimed range as Lee teaches of emulsions with 10-30% gum arabic (Page6, lines 23-25), i.e., aqueous solutions or dispersions comprising gum arabic were known. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hayashi further in view of Lee and utilize gum arabic in a suitable amount to make a solution having desired viscosity or thickness. Thus, applicant's arguments regarding references not teaching the invention as claimed have not been found persuasive.

Applicant's other argument that Hayashi does not teach maintaining gum arabic at 5-40 °C for at least 6 hours as recited in claim 4 (Page 3, last 2 lines) is also not persuasive for the reasons provided above in the rejection.

ii) In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., water content of gum arabic solution in claim 1 and any specific "dissolving concentration of gum arabic") are not recited in the rejected claim(s) 1. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

iii) Applicants' submission of affidavit by Mr. Katayama of 4/5/2011 and also of 6/15/2011 regarding the detailed description that gum arabic at a loss on drying of 3-30% is not an aqueous solution but rather a powder/agglomerate (Page 4, declaration) has been noted. Applicant's main argument is that the product as taught by Hayashi does not have similar gum arabic and water concentration as instantly claimed. Applicants further provided evidence by way of a declaration by Mr. Katayama of 6/15/2011, which highlights the physical state of gum arabic samples with different proportions mixed with water (See Pages 2-4 of declaration). However, independent claim 1, does not require a specific gum or water content in solution and applicant

compares the product of Hayashi to the invention as claimed in claims 2-3, whereas for claims 2-3 Musher and Lee have further been relied upon to show the conventionality of making a solution with gum arabic in the claimed range.

Thus, arguing against one reference Hayashi when a combination of references have been employed to address the limitations claims 2-3 has not been found persuasive. Applicant's arguments further address that claim 1 is not taught by Hayashi however, claim 1 does not require a specific amount. Arguments against Hayashi in light of the declaration also fail to address that Hayashi is employed in combination with other references to teach the invention as claimed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JYOTI CHAWLA whose telephone number is (571)272-8212. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lawrence Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JYOTI CHAWLA/
Examiner, Art Unit 1781